

Tank Talk

Minimizing Out-of-Service Time during Tank Painting

by Kenneth A. Jacobi, Regional Manager Headquarters

Tank painting projects can cost many thousands of dollars, but often the most costly aspect of tank rehabilitation is having your tank out-of-service. What can be done to get your tank back in service sooner? One approach is to control the environment and minimize delays due to poor weather. Another is to use coatings that tolerate a wide range of climatic conditions and cure quickly at ambient temperature. By combining these methods, downtime can be greatly reduced.

Controlling the environment generally refers to interior coating application but can also be accomplished for exterior surfaces by using a containment system. In either case, controlling humidity (dew point) is the most critical factor. Heating or cooling can also be used along with ventilation during the blasting and coating operations. Where dehumidification, heating, cooling, and/or dust collection are being used, ventilation is the basic component of total air treatment.

Ventilation: The primary purposes of ventilation during blasting and painting operations in enclosed areas are for worker health, safety, and visibility. Proper ventilation is also required to reduce airborne contamination of the freshly blasted surfaces and to reduce and remove solvents during coating operations. Ventilation is measured in terms of the volume of air movement over time, expressed as cubic feet per minute (CFM). A general guideline is to provide one complete air change every three minutes during blasting.

Dehumidification: Determining the DH (dehumidification) requirements involves knowing the type of coatings that will be used. Moisture-cured coatings such as inorganic zincs, moisture-cure urethanes, and some epoxies will require some moisture to cure. This must be taken into consideration when sizing the DH unit for a particular job.

Heating/Cooling: One last item to consider is additional heat requirements. On warm days with cool nights, the change in the surface temperature (lower) may cause moisture to form unless you have a very, very low dew point. To help overcome this problem,

providing additional heat will help maintain the surface temperature and dew point spread, and also decrease the relative humidity. Heat may also be needed to maximize proper cure of catalyzed coatings. In very warm conditions, cooling may be used in addition to dehumidification to maintain worker comfort.

Coating Selection is critical when trying to minimize out-of-service time whether dehumidification is used or not. For tank interiors, there are several options.

• **Epoxy**, the most widely used coating for the interiors of water tanks, can be accelerated for faster recoating and cure. New high-solids rapid-cure formulas are also available for quick turnarounds.

• **Two-Component Quick-Setting 100% Solids Polyurethanes** have also been used successfully. At 70° F, initial set is in just three minutes, and ultimate cure is only 48 hours.

Exterior systems, typically epoxies with a polyurethane topcoat, are also available in accelerated and quick-cure formulas. They provide faster recoating and quicker moisture resistance. Another type of exterior system successfully used is a **moisture-cured polyurethane**. These coatings can be applied at up to 100% humidity without compromising their appearance or performance.

Whether your concern is maintaining adequate water pressure for your water customers needs, the additional costs for temporary piping and pumps, or even mandated limitations on out-of-service time, there are coating systems and engineered systems that now make it possible for you to properly maintain your water tank and minimize out-of-service time.

Whether you have one tank or are a multi-tank system, having a tank off line can cause problems.

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President's Corner

by Steven P. Roetter, P.E., President, Tank Industry Consultants

We Americans seem to be in an age of “do-it-yourself.” We can now consult a web page and self-diagnose medical problems. We can trade stocks over the internet. And, there are even instructions for making everything from McDonald’s secret Big Mac sauce to mega-ton bombs on the World Wide Web. Obviously, I wouldn’t recommend all these “do-it-yourself” projects. With a fever of 102 degrees, I’d rather be face-to-face with my doctor than trying to double click my way through my symptoms—but, I have been known to trade a stock or two over the internet.

What about “do-it-yourself” tank evaluations...a good idea? Absolutely! The American Water Works Association recommends that every 3 to 5 years, professional inspections should be performed by a tank maintenance engineer with both knowledge of traditional engineering and specialized training and experience in the design and maintenance of water storage tanks. But in between these professional inspections tank owners’ personnel can and should do some cursory tank evaluation themselves. At least once each year (or once each quarter, if feasible), a general appraisal of the tank’s condition should be performed.

- The foundation should be examined for signs of settlement, and the concrete inspected for evidence of cracking, crumbling, or exposed reinforcing steel.
- The tank should be observed for signs of leaking or rust streaking that could be caused by a leak. If a leak is discovered, a professional structural engineer familiar with water tank maintenance should inspect the tank as quickly as possible.
- The general condition of the exterior coating and evidence of corrosion should be monitored. If the exterior of your tank is in poor condition, the condition of the interior coating could be as poor or worse.
- The tank and site should be monitored for signs of unauthorized access and vandalism. Damage to the

tank site or graffiti on the tank are sure signs of unauthorized access, which is a potential liability for the tank owner.

- Manholes and other means of access to the tank interior should be checked to confirm that they are secured against unauthorized entrance. Unlocked manholes are again a potential liability for the tank owner.
- The condition of sanitary items such as the overflow discharge screening and vent screening, and any potential for a cross connection between the potable water stored in the tank and water in the storm or sanitary sewer should be checked.
- Immediately following a tornado, major windstorm, earthquake, or during freezing weather, your tank should be evaluated for any possible damage. If damage is evident, a professional structural engineer familiar with water tank maintenance should evaluate the structural condition of the tank as quickly as possible.

Other items that may need to be checked even more frequently are the proper positioning and operation of the pallets before and after freezing weather if the tank is equipped with a clog-resistant vent, and the proper operation of any obstruction lighting on the tank. Any above-ground evaluation should only be conducted by experienced climbers equipped with the proper safety equipment.

In addition to identifying potential problems with the tank, the basic intention of owner-performed evaluations should be to determine the need for professional assistance. That’s when you should call TIC!

For more information on owner-performed evaluations, refer to the *AWWA M42 Steel Water-Storage Tanks*.

Have a good summer!

P.S. You can even find TIC on the World Wide Web at www.TankIndustry.com. Stop by and visit.

Tank Tips

Excerpted from TIC’s Top 10 Tank Tips

- **Keep it clean.** Vegetation and debris covering the bottom plate can shorten the useful life of a tank. Keep the foundation clean and properly graded to promote drainage away from the tank.
- **Don’t be all wet.** Be alert for evidence of bottom leaks. The tank bottom is typically the most likely to leak first. If left untreated, even bottom leaks can lead to catastrophic failure.
- **Keep your eye on ‘em.** Tanks should be evaluated every 3 to 5 years by a professional engineering firm, and annually by water department personnel.

**AWWA Annual Conference
Tank-Related Committee
Meeting Schedule
on the Web
www.TankIndustry.com**

Industrial & Water Tank Talks!

For more than 20 years, *Tank Talk* has been an informational resource for storage tank owners, operators, and engineers. As the storage tank industry has grown, more and more complex issues, standards, and regulations have been implemented. To make sure that all our readers have up-to-date information that is of value to them, we are publishing newsletters for both the water and industrial segments of the industry.

If you have received the wrong edition of this newsletter or you would like to receive both, please contact us:

**snodgrass@TankIndustry.com
317 / 271-3300—fax**

Thanks for reading, and if you have any topics, questions, or concerns that you would like to have addressed in future editions of *Tank Talk*, please let us know.

Engineered Solution to Cable Clutter

By Todd D. Moore, P.E., Chief Engineer

During the past decade, cellular antennas—the pluses and minuses of having them on your water storage tanks—has been a major topic of concern for water tank owners. In past *Tank Talks* we've discussed the “how to's” and “how not to's” of antenna installation and contract negotiations. Now that you have the antennas on your tanks, what are you going to do with all the associated stuff on your tank.

We have written or reviewed specifications for literally hundreds of antenna installation projects. There appears to be no end to the “wireless revolution,” and the need for antenna sites continues to grow. With growing community resistance to installing new antenna towers, the demand to locate antennas on existing structures, such as water tanks, escalates. Each cellular carrier typically installs between 3 and 12 antennas at each site. With collocation on an individual tank, it is easy to multiply the numbers by 2, 3 or even 4 times. Now instead of having one antenna carrier with 6 or 12 antennas, it's likely that you have between 12 and 36 antennas on your tank. We've seen as many as 60 antennas on a single tank! And with the antennas come a massive jumble of cables. The old “put'em-in-a-conduit-and-run-it-down-the-side-of-the-tank” approach may no longer work. How can you deal with the cable clutter, and not end up with a maintenance nightmare?

On several recent projects we have specified cable ladders or trays to provide the necessary support for the cables. The cable ladders provide uniform attachment points for the cables and accommodate snap-in cable hangers for ease of installation. By installing a solid cover on the cable ladders, the cables are effectively hidden from view. If aesthetics are a major concern, the covers can be painted to match the tank. If adequate separation between these cable ladders and the tank surface is maintained, the difficulty of cleaning and painting the tank behind the cables is minimized.

The brackets used to support the cable ladders should be installed, cleaned, and painted prior to installation of the cable ladders. The number of cable ladders needed obviously depends on the number of cables and antennas. Each cable ladder can typically hold between 6 and 12 cables. Usually, you can expect one cable tray for each carrier on the tank. Providing some lateral separation between each tray is also important to allow enough room to clean and paint the tank between the cable ladders.

A word of caution: Don't forget about the 911, police dispatch, and other emergency antennas that can't be taken out of service for tank repainting. Be sure to include provisions for keeping them active in your painting and maintenance specifications.

Stop By and Visit!

We regularly take the “show on the road” and visit much of the country at various trade shows and conferences. In the coming months we will be in:

Washington, D.C.

American Water Works Association Annual Conference and Exposition

June 17—21—Booth 1447

Corpus Christi, TX

Texas Association of Water Boards

June 21—23

Rocky Gap, MD

Chesapeake Section AWWA

August 14-17

Hershey, PA

Pennsylvania Municipal Authorities Assn

August 26—28

Philadelphia, PA

American Public Works Association

September 9-12

Springfield, IL

Illinois Potable Water

September 12-14

Lexington, KY

Kentucky/Tennessee Section AWWA

September 16-19

San Diego, CA

AWWA Distribution Systems

Symposium

September 23-25

Salt Lake City, UT

International City/County

Management Association

September 23-25

Palm Springs, CA

National Association of

Water Companies

October 7-11

Richmond, VA

Virginia Section AWWA

October 30—November 3

Atlanta, GA

SSPC: The Society for Protective Coatings

November 12-14

Orlando, FL

Florida Section AWWA

November 25-29

Stop by and we'll Talk about Tanks!

Tank Talk® is published as an informational resource for the storage tank industry.

For past issues of Tank Talk, or to learn more about the services offered by TIC, please contact:

Tank Industry Consultants

7740 West New York Street, Indianapolis, Indiana 46214

317 / 271-3100 (phone) — 317 / 271-3300 (fax)

Articles from previous issues of Tank Talk can be found on our web site

www.TankIndustry.com

Email: snodgrass@TankIndustry.com

Offices Nationwide

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Industry News

Stephen W. Meier, P.E., S.E. Named Chair of AWWA Steel Tank Committee

Steve Meier, long-time AWWA committee member and Vice President of Tank Industry Consultants has been named the Chair of the **American Water Works Association's Steel Tank Committee**. This committee is responsible for all standards and manuals concerning steel water storage tanks published by AWWA include D100, D102, D104, and M42 *Steel Water Storage Tanks*, among others.

At the request of the AWWA Standards Committee, Steve has been a Interim Chair of the committee since TIC's founder and former chair, E. Crone Knoy, passed away last March.

Gregory R. "Chip" Stein, P.E. Named to AWWA and SPFA Posts

Chip Stein, Vice President of TIC, has been named to the **American Water Works Association Conference Planning Committee**. This committee is responsible for the planning and coordination of the Annual Conference and other major meetings and specialty conferences.

Chip has also been elected to the **Steel Plate Fabricators Association** Board of Directors. SPFA is an organization of companies dedicated to the advancement of knowledge and high quality fabrication of steel products. The SPFA Steel Tank Committee hosts *Steel Tank Seminars* throughout the United States.

John Lieb, P.E. Expertise Recognized by Industrial Associations

The **Welding Research Council** has published Bulletin 453, *Minimum Weld Spacing Requirements for API Above-Ground Storage Tanks*. John Lieb, Chief Industrial Engineer for Tank Industry Consultants was among its authors. The Bulletin sets forth the minimum weld spacing requirements for API above-ground storage tanks.

John has also been named chair of the **American Society of Mechanical Engineers** committee to develop a *Standard for the Design and Construction of Structures for Bulk Solids*. It is anticipated that this Standard will have a substantial impact on the bulk storage industry.

Seminars

Water Storage Tank Design, Construction & Maintenance

For over 20 years, Tank Industry Consultants has been presenting this two-day seminar to tank owners, engineers, and operators throughout the United States. The seminar provides information about how to develop construction and maintenance programs, plan and budget for the anticipated work, implement inspection programs, and manage the decision-making process. The seminar is lead by the industry's foremost experts in water storage engineering. This fall, seminars are planned in:

Philadelphia, Pennsylvania
Marriott Philadelphia West
September 17 & 18, 2001

Richmond, Virginia
Richmond Marriott Hotel
September 20 & 21, 2001

Phone **1-800-TANKSEM** for details and enrollment information
or visit our website
www.TankIndustry.com